CORRUPTION*

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This paper presents two propositions about corruption. First, the structure of government institutions and of the political process are very important determinants of the level of corruption. In particular, weak governments that do not control their agencies experience very high corruption levels. Second, the illegality of corruption and the need for secrecy make it much more distortionary and costly than its sister activity, taxation. These results may explain why, in some less developed countries, corruption is so high and so costly to development.

I. Introduction

We define government corruption as the sale by government officials of government property for personal gain. For example, government officials often collect bribes for providing permits and licenses, for giving passage through customs, or for prohibiting the entry of competitors. In these cases they charge personally for goods that the state officially owns. In most cases the goods that the government officials sell are not demanded for their own sake, but rather enable private agents to pursue economic activity they could not pursue otherwise. Licenses, permits, passports, and visas are needed to comply with laws and regulations that restrict private economic activity. Insofar as government officials have discretion over the provision of these goods, they can collect bribes from private agents.

Corruption is both pervasive and significant around the world. In some developing countries, such as Zaire and Kenya, it probably amounts to a large fraction of the Gross National Product. Corruption is also common in the developed countries: defense officials sometimes sell contracts for personal gain, and local zoning officials are bribed to rezone. Still, economic studies of corruption are rather limited. Following Becker and Stigler [1974], most studies (e.g., Banfield [1975], Rose-Ackerman [1975, 1978], and Klitgaard [1988, 1991]), focus on the principal-agent model of corruption. This model focuses on the relationship between the principal, i.e., the top level of government, and the agent, i.e., an official, who takes the bribes from the private individuals interested in some government-produced good. These studies examine ways of motivating the agent to be honest, ranging from efficiency

wages [Becker and Stigler, 1974] to indoctrination [Klitgaard, 1991]. In this paper we take the principal-agent problem as given—the corrupt official has some effective property rights over the government good he is allocating—and focus on *consequences* of corruption for resource allocation.

In particular, we address two issues. First, we discuss the implications of how the corruption network is organized. In some economies, such as Korea today and Russia under Communists, while corruption is pervasive, the person paying the bribe is assured that he gets the government good that he is paying for, and does not need to pay further bribes in the future. In other economies many government goods can be obtained without bribes altogether. For example, a citizen can get a passport in the United States without paying a bribe. In yet other economies, such as many African countries and post-Communist Russia, numerous bureaucrats need to be bribed to get a government permit, and bribing one does not guarantee that some other bureaucrat or even the first one does not demand another bribe. We examine the implications of these three regimes for the level of corruption and for the effects of corruption on economic activity.

Second, we ask why even well-organized corruption appears to be more distortionary than taxation. Several authors have pointed out that some corruption might be desirable [Leff, 1964]. First, it works like a piece rate for government employees (a bureaucrat might be more helpful when paid directly). Second, it enables entrepreneurs to overcome cumbersome regulations. Yet most studies conclude that corruption slows down development [Gould and Amaro-Reyes, 1983; United Nations, 1989; and Klitgaard, 1991]. We ask why bribery might be much more costly than its sister activity, taxation, and argue that the imperative of *secrecy* makes bribes more distortionary than taxes.

The next section sets out our basic model of corruption, and briefly addresses the question of why corruption spreads. Section III looks at the market structure of the supply of government goods as a determinant of the level and consequences of corruption. Section IV examines the costs of corruption focusing on secrecy. Section V concludes.

II. Basic Model

To fix ideas, we consider the simplest model of one government-produced good, such as a passport, or a right to use a government

road, or an import license. We assume that this good is homogeneous, and that there is a demand curve for this good, $D(p)$, from the private agents. We assume that this good is sold for the government by an official, *who has the opportunity to restrict the quantity of the good that is sold.* Specifically, he can deny a private agent the passport, access to a road, or an import license. In practice, this denial might mean a long delay or an imposition of many requirements. But it is easier to assume for now that the official can simply refuse to provide the good. An important reason why many of these permits and regulations exist is probably to give officials the power to deny them and to collect bribes in return for providing the permits [De Soto, 1989].

We also assume that the official can in fact restrict supply without any risk of detection or punishment from above. Corrupt officials go unpunished because their bosses often share in the proceeds and because public pressure to stop corruption in most countries is weak. We shall also discuss the case in which corruption is penalized. But for now, the government official is a monopolist selling the good. His objective is to maximize the value of the bribes he collects from selling this government good.

Let the official government price of this good be p. We assume that the cost of producing this good is completely immaterial to the official since the government is paying this cost. This assumption is a bit restrictive. While it covers the sale of an import license, a passport, or a passage on a government road, a policeman who sells his services that he is supposed to provide for free does exert personal effort and so does care about its cost. For simplicity, we focus on government goods that cost the official nothing personally to provide, so that he has no interest in how much it costs the government to produce these goods.

What then is the marginal cost to the official of providing this good? We distinguish two cases. First, in the case *without theft,* the official actually turns over the official price of the good to the government. In this case, the marginal cost of providing the good to the official is this government price p. For example, when an official sells a license for a government price plus a bribe, he keeps the bribe but the amount p stays with the government; hence p is his marginal cost. In contrast, in the case *with theft,* the official does not turn over anything to the government at all, and simply hides the sale. In this case, the price that the buyer pays is only equal to the bribe, and might be even lower than the official price. For example, customs officials often let goods through the border for

less than the official duty, but then give nothing at all to the government. In this case, the marginal cost to the official is zero. While conceptually the two cases are similar—they differ only in the level of the marginal cost to the official—in the first case corruption always raises the total price of the good, whereas in the second case it might reduce it. Corruption with theft is obviously more attractive to the buyers.

   If the official cannot price discriminate between buyers, then as a monopolist, he will simply set the marginal revenue equal to the marginal cost. In the case without theft, the total price with the bribe always exceeds the government price. It pays the official to create a shortage at the official price, and then to collect bribes as a way to clear the market for the government-supplied good [Shleifer and Vishny, 1992]. In the case with theft, the total price might be below the government price. Figures Ia and Ib present the solutions to this problem for the cases without and with theft, respectively.

   This analysis suggests a similarity between bribes and commodity taxes. In the case without theft, the bribe is exactly equal to the revenue-maximizing commodity tax when marginal cost is equal to the state price p. Of course, taxes need not be set to maximize revenue. More importantly, taxes are typically kept by the government rather than the bureaucrats. In monarchal regimes, the
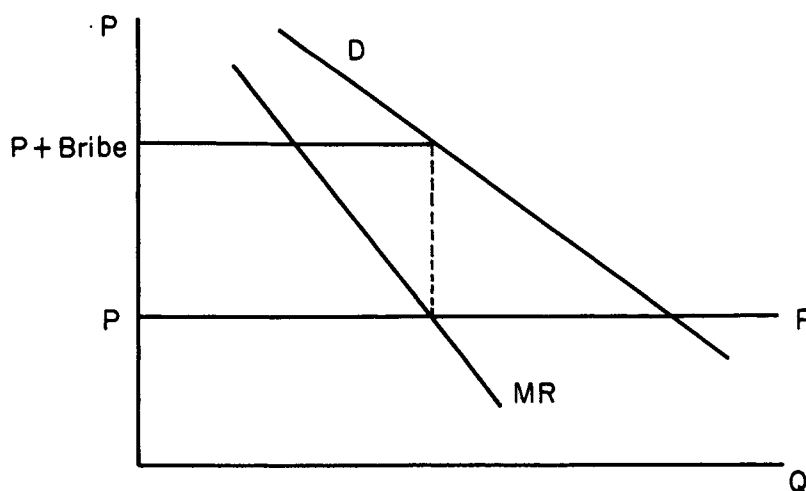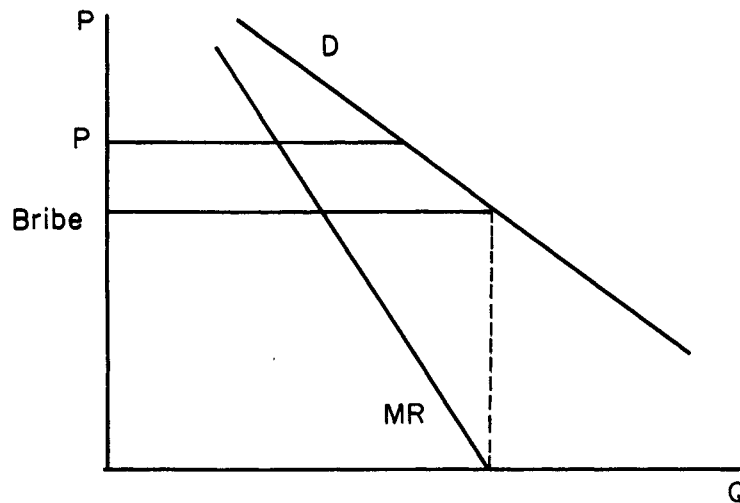

FIGURE Ia
Corruption without Theft

FIGURE Ib
Corruption with Theft

distinction between taxes and bribes is blurred by the fact that the treasury is indistinguishable from the sovereign's pocket. Yet for most governments, the distinction is material and shows how corruption substitutes for taxation.

Penalizing the official for corruption changes the level of the bribe he demands, but does not change the essence of the problem. If the probability of detection and the penalty are independent of the bribe and of the number of people who pay it, the official will charge the same bribe provided that the penalties are not so high that corruption is no longer profitable. If the expected penalty increases with the level of the bribe, he might reduce the bribe and raise output. On the other hand, if the expected penalty rises in the number of people he charges a bribe (for example, because of the higher probability of a complaint), then he will reduce the supply and raise the bribe. The official trades off the benefits given in Figures Ia and Ib against the expected penalties. For our purposes, we do not need to focus on this aspect of the problem (see Becker and Stigler [1974], Rose-Ackerman [1978], and Klitgaard [1988]).

This simple analysis suggests that corruption spreads because of competition both between the officials and between the consumers. If jobs are distributed among officials through an auction mechanism, whereby those who pay the most for a job get it, then the prospective officials who do not collect bribes simply cannot

afford jobs. Conversely, those who will collect more (perhaps through more effective price discrimination), will offer the higher officials more for the jobs, and so will be able to get them. Competition between officials will assure that maximal bribes are collected.

Even more important for the spread of corruption is competition between the buyers in the case with theft. If buyer A can buy the government service more cheaply than buyer B can, then he can outcompete buyer B in the product market. So if buyer A bribes an official to reduce his costs, his competitors must do so also. If all real estate owners in a city can bribe their way out of paying taxes, then those who pay them will not survive. If some trucks carry goods across a border after paying a small bribe instead of the official customs duty, the importers who pay the duty will not survive. Competition between buyers of government services assures the spread of cost-reducing corruption. Interestingly, such competition does not help the spread of corruption *without* theft.

Corruption with theft spreads because observance of law does not survive in a competitive environment. In addition, the buyer in this case has no incentive to inform on the official, and hence the likelihood that corruption is detected is much smaller. This creates a further incentive for corruption with theft to rise. Because corruption with theft aligns the interests of the buyers and sellers, it will be more persistent than corruption without theft, which pits buyers against sellers. This result suggests that the first step to reduce corruption should be to create an accounting system that prevents theft from the government. In the collection of taxes and customs duties, such accounting systems might well reduce corruption because without theft bribes raise the buyer's cost and hence give him the incentive to expose the corrupt official.

III. THE INDUSTRIAL ORGANIZATION OF CORRUPTION

The model above makes two strong assumptions. First, a buyer needs only one government good to conduct his business. Second, the official is a monopolist in the supply of this good. Yet some critical issues in corruption arise when these assumptions do not hold. In many cases, a private agent needs several *complementary* government goods to conduct business. For example, an importer might need several government licenses and permits, to be obtained from several agencies, to bring in, unload, transport, and sell an imported good. A builder might need several permits

from different departments, such as fire, water, and police. With multiple goods, the market structure in their provision becomes important. The different agencies that supply the complementary goods might collude, sell the different goods independently, or even compete in the provision of some goods. The focus on market structure in the provision of complementary government goods sheds light on the consequences of corruption.

The model of the previous section is most appropriate for understanding corruption in monarchies, such as the Bourbons in France or Marcos' Philippines, in the old-time Communist regimes, and in regions dominated by a single mafia. In such places, it is always clear who needs to be bribed and by how much. The bribe is then divided between all the relevant government bureaucrats, who agree not to demand further bribes from the buyer of the package of government goods, such as permits. In Russia, for example, bribes were channeled through local Communist party offices. Any deviation from the agreed-upon pattern of corruption would be penalized by the party bureaucracy, so few deviations occurred. Once a bribe was paid, the buyer got full property rights over the set of government goods that he bought. Carino [1986] and Klitgaard [1988] describe similar monopolistic corruption structures in the Philippines.

There are two extreme alternatives to this monopoly corruption scheme. The first alternative is corruption in some African countries, in India, and in post-Communist Russia. Here the sellers of the complementary government goods, such as permits and licenses, act independently. Different ministries, agencies, and levels of local government all set their own bribes independently in an attempt to maximize their own revenue, rather than the combined revenue of all the bribe collectors. In Russia in 1991, for example, getting a business started often required bribing the local legislature, the central ministry, the local executive branch, the fire authorities, the water authorities etc. In some African countries, many quasi-independent government agencies have the power to stop a project, and use it to set bribes without collusion with other agencies [Klitgaard, 1990]. The army and the police also often demand a cut for protection—another needed government input. Unlike the single monopoly model, here complementary government goods are sold by independent monopolists.

Formally, consider first a joint monopolist agency that sets the cum bribe prices p_1 and p_2 of two government goods. Let x_1 and x_2 be the quantities of these goods sold. Let the official prices, equal to

the monopolist's marginal costs, be denoted by MC_1 and MC_2. The per unit bribes then are $p_1 - MC_1$ and $p_2 - MC_2$. The joint monopolist agency sets p_1 at which

$$(1) \qquad MR_1 + MR_2 \frac{dx_2}{dx_1} = MC_1,$$

where MR_1 and MR_2 denote marginal revenues from the sale of goods 1 and 2, respectively. When the two goods are complements, as government permits for the same project are, then $dx_2/dx_1 > 0$, and so at the optimum, $MR_1 < MC_1$. The monopolist agency keeps the bribe on good 1 down to expand the demand for the complementary good 2 and thus to raise its profits from bribes on good 2. For the same reason, this agency keeps down the price of good 2.

Suppose alternatively that permits 1 and 2 are allocated by independent agencies. Each agency then takes the other's output as given, and in particular, in equation (1), dx_2/dx_1 is set to zero. At the independent agency's optimum, $MR_1 = MC_1$. Hence the per unit bribe is higher, and the output lower, than at the joint monopolist optimum. Because the independent agency ignores the effect of its raising its bribe on demand for the complementary permits and hence the bribes to the other agency, it sets a higher bribe, which results in a lower output and a lower aggregate level of bribes. By acting independently, the two agencies actually hurt each other, as well as the private buyers of the permits.

This problem is made much worse in many countries by free entry into the collection of bribes. New government organizations and officials often have the opportunity to create laws and regulations that enable them to become providers of additional required permits and licenses and charge for them accordingly. Having paid three bribes, the buyer of these inputs learns that he must buy yet another one if he wants his project to proceed. In some cases, the officials who have collected the bribe previously come back to demand more (see Klitgaard [1990] for striking examples). In these cases, the property rights to his project are not really transferred to the buyer when he pays the bribe. The point is that even the list of the complementary inputs is not fixed, and tends to expand when profitable corruption opportunities stimulate entry. When entry is completely free, the total bribe rises to infinity and the sales of the package of government goods, as well as bribe revenues, fall to zero.

In the third scenario, *each one* of the several complementary government goods can be supplied by at least two government agencies. For simplicity, begin with the case of one such good, such

as a United States passport or a driver's license. A citizen can obtain a U. S. passport without paying a bribe. The likely reason for this is that if an official asks him for a bribe, he will go to another window or another city. Because collusion between several agents is difficult, bribe competition between the providers will drive the level of bribes down to zero. This example can be extended to the case of multiple complementary goods. If a builder needs several permits to erect a building, but any one of them can be obtained from one of several noncolluding government agents, Bertrand competition in bribes will force the equilibrium bribe on each permit down to zero. Unlike the first model, where a unified monopoly provides all the goods, and the second model, in which monopoly suppliers of different goods act independently, here the market for each government-supplied good is competitive.

As in other industrial organization contexts, even having two competitors is not necessary if the market is subject to potential competition or entry [Demsetz, 1968]. Consider, for example, a single government employee in a small U. S. city, who controls building permits, dog permits, permits to dispose of old appliances, etc. If this employee attempts to charge a bribe, or to price his services above marginal cost, another individual would offer the public the same service at a lower price, and the corrupt official will be recalled or fail to get reelected. The threat of such competition would then keep corruption down to zero, assuming that the official price covers the marginal cost of providing the permits.

The level of bribes is the lowest in the third case, intermediate in the first, and the highest in the second. But the total amount of revenues collected is higher in the first case than in the second, since the independent monopolist suppliers drive the quantity sold so far down that the total revenues from corruption fall. This result is obvious: in the first case the suppliers of the complementary inputs collude to maximize the total value of bribes, but in the second they do not.

This problem is formally identical to a standard problem in industrial organization. Suppose that a carmaker needs two complementary inputs, glass and steel. If both are provided by one monopolist, he will realize that raising the price of glass reduces the demand for his own steel, and hence his profits on the steel sales, and similarly with raising the price of steel. Accordingly, he will price steel and glass taking account of the demand complementarities. In contrast, if glass and steel are sold by two independent monopolists, each will ignore the effect of his raising his price on

the demand for the product of the other. As a result, each would charge a higher price than a joint monopolist would, and both the quantity of steel and glass sold, and the combined profits from these sales would be lower. In the last scenario, if each of these independent monopolists can sell both steel and glass, and they compete on price, they will drive the price of both steel and glass down to the marginal cost. The profits will be the lowest, and output the highest, of the three cases. Competition is the best; joint monopoly is the second best; and independent monopoly is the worst for efficiency. Moreover, the more inputs car production requires, the lower is output with independent monopolists.

Another helpful analogy is to tollbooths on a road. The joint monopoly solution corresponds to the case of one toll that gives the payer the right to use the entire road. The independent monopolists solution means that different towns through which the road passes independently erect their own tollbooths and charge their own tolls. The volume of traffic and aggregate toll collections fall. In fact, they fall to zero when *any* party can erect its own tollbooth on this road. The competitive case corresponds to multiple booths competing with each other for the right to collect the toll, or alternatively to the case of multiple roads. In this case, the volume of traffic is obviously the highest, and toll collections are the lowest.

This, in fact, is a very close analogy. In India, taking a road between two towns indeed requires paying a bribe in every village through which the road passes. Taking goods inland in Zaire is more expensive because of corruption than bringing them from Europe by ship to a port. In 1400 there were 60 independently run tolls along the Rhine. Along the Seine there were so many tolls that to ship a good twenty miles cost as much as its price. In contrast, rivers in England were free of such tolls, which in part explains the ability of England to develop specialized, commercial agriculture feeding London, the world's center of commerce [Heilbroner, 1962]. These examples suggest how costly free entry into bribe collection might be to development.

This industrial organization perspective on corruption sheds light on the consequences of corruption in different countries and places. It also raises the far deeper question: what determines the industrial organization of the different corruption markets? How did Brezhnev and Marcos manage to enforce joint profit maximization? Why has this system fallen apart in Russia, and never existed in Africa? How has the U. S. government managed to eradicate

corruption in the provision of at least some, though by no means all, government goods?

Enforcement of joint profit maximization in bribe collection is closely related to the problem of enforcing collusion in oligopoly. Stigler [1964] shows that collusion is more likely to be enforced when price-cutting can be easily detected, and punishment for price-cutting can be severe. In the corruption context the parallel argument is that collusive bribe maximization can be enforced more easily when bribe *increases* can be more easily detected and more severely punished.

Bribe increases can be easily detected in several circumstances. First, when the government has an effective policing machine to monitor the actions of the bureaucrats, such as the KGB in the Soviet Union or Mayor Daley's Democratic Party machine in Chicago, it is hard to charge excessive bribes without being found out. Second, when the ruling elite is small, as in the Philippines or in Communist Russia, deviations from normal bribes will be easy to see. Third, when the society is homogeneous and closely knit, as in East Asia, deviations from normal bribes are likely to become known to friends and family, and such knowledge is likely to spread. Police states, small oligarchies, and homogeneous societies are thus likely to come closer to joint bribe maximization than more open, less tightly governed and more heterogeneous societies.

The ability of the cartel to punish those who charge excessive bribes is also essential to enforcing collusion. The ability of the leadership to exclude deviators from the rents associated with being an insider is essential. When large rents come from being a communist in Russia, a democratic politician in Chicago, a part of the ruling clique, or a member of the military elite, and when the sovereign can take these rents away from the deviators, deviations are unlikely. On the other hand, if the rents are small, and, more importantly, the sovereign is in no position to take them away, joint bribe maximization cannot be sustained. For example, in feudal Europe, in post-Communist Russia, and in many African countries, the central government is so weak that it cannot fire or penalize officials in the provinces, or even bureaucrats sitting in the capital, for running their own corruption rackets. In this situation the "independent monopolists" model, with its devastating economic consequences, describes reality best.

Huntington [1968] observes that political modernization, defined as a transition from an autocratic to a more democratic

government, is usually accompanied by increases in corruption. He attributes this problem to underdeveloped institutions under the newly formed governments. If underdeveloped institutions mean a weak state machine, then Huntington's story fits well with our model. New governments lose monopoly over bribe collection, and as a result, multiple agencies take bribes where only one did before, leading to a much less efficient allocation. In the Philippines under Marcos, all corruption flowed to the top; since his demise, the number of independent bribe takers has increased, and so the efficiency of resource allocation has probably declined. Russia under Communists had a monolithic bribe collection system. With Communists gone, central government officials, local officials, ministry officials, and many others are taking bribes, leading to much higher bribes in equilibrium though perhaps lower corruption revenues, just as the model predicts. Similar stories are told about Africa after independence, when the colonial corruption machines disintegrated [Ekpo, 1979]. The evidence is strikingly consistent in showing the superiority of monopolistic bribe taking over that by independent monopolists.

The two cases we examined share basically authoritarian governments with little responsiveness to public pressure against corruption. As a result, both produce high levels of corruption, although they differ in how inefficient this corruption is. Countries with more political competition have stronger public pressure against corruption—through laws, democratic elections, and even the independent press—and so are more likely to use government organizations that contain rather than maximize corruption proceeds. It is implausible to think, for example, that the U. S. president maximizes corruption proceeds, since such a president is likely to be exposed and thrown out of office. Even in Japan and Korea, where corruption is very common, the level of bribes tends to be significantly lower than in Russia or the Philippines. The likely reason for this is political competition within the ruling parties as well as from the opposition parties in these countries. Because low bribes keep potential competitors out, political competition keeps corruption down (see Demsetz [1968]).

Our industrial organization perspective suggests that the best arrangement to reduce corruption *without theft* is to produce competition between bureaucrats in the provision of government goods, which will drive bribes down to zero. The passport office, and many other agencies of the U. S. government, have actually introduced such arrangements. The Pentagon has not, and it is

probably more corrupt. The general idea behind federalism is precisely such competition in the provision of public goods, although it is usually stated in terms of taxes rather than bribes. Of course, in the case of corruption *with theft,* competitive pressure might increase theft from the government at the same time as it reduces bribes. The appropriate policy, then, is to create competition in the provision of government goods while intensively monitoring theft.

IV. CORRUPTION AND SECRECY

Although some political scientists have argued that the optimal level of corruption is positive [Leff, 1964; Huntington, 1968], most studies suggest that existing corruption levels are detrimental to development [Gould and Amaro-Reyes, 1983; United Nations, 1989; Klitgaard, 1991]. Africa is reputed to be a very corrupt continent; it is also the poorest one. Central and South America are also known for the extreme corruption and poverty. In contrast, developed countries appear to be less corrupt.

Mauro [1993] presents the first systematic empirical analysis of corruption by focusing on the relationship between investment and corruption. Mauro uses an index of corruption from *Business International* [1984], a publication of *Economist Intelligence Unit,* which supplies subjective assessments of 56 risk factors for 68 countries to private investors. The corruption variable is defined as "the degree to which business transactions involve corruption and questionable payments," and is used for 1980. The average ratio of total and private investment to GDP for the period between 1970 and 1985 is drawn from Barro [1991], as is real GDP per capita for 1980. Mauro finds that, holding 1980 real GDP constant, countries with higher corruption have a lower ratio of both total and private investment to GDP. The estimates are statistically significant. These results are consistent with the view that corruption is bad for development.

The independent monopolists model, which shows that under free entry of bribe takers supplying complementary inputs the total bribe rises to infinity and productive output falls to zero, may help explain why the most corrupt countries are so poor. Yet even more modest corruption seems to have detrimental effects. In this section we discuss these detrimental effects of corruption.

In the case of an economywide bribe-collecting monopolist, such as Marcos, corruption is similar to revenue-maximizing

taxation. Like the sovereign who optimally taxes different goods and activities, the monopolist will set bribes to maximize revenue. In this world it is difficult to distinguish between bribes and taxes. Taxes are the markup on the price that goes into the treasury, and bribes are the markup that goes into the pocket of the monopolist. When the treasury and the pocket are one and the same, as in the case of kings and Marcos, taxes and bribes are exactly the same. With multiple monopolists, bribes are also similar to taxes, except that tax rates on different activities are set by independent agencies. In setting tax rates in this way, the agencies maximize their own tax revenues rather than the aggregate tax revenue. Because they ignore the cross elasticities of demand, the aggregate tax revenues are lower in this case. Finally, the case of competing monopolists corresponds to the federalist ideal of competing jurisdictions. In this case as well, bribes are similar to taxes.[1]

Despite these similarities, bribes differ from taxes in one crucial way, namely, unlike taxation, corruption is usually illegal and must be kept secret. Efforts to avoid detection and punishment cause corruption to be more distortionary than taxation. On some goods, taking bribes without being detected is much easier than on others. Government officials will then use their powers to induce substitution into the goods on which bribes can be more easily collected without detection. For example, officials might ban some imports to induce substitution into others. Or they might prohibit entry of some firms to raise bribe revenue from existing monopolies. Historically, sovereigns used such mercantilist policies to increase tax collections because monopoly profits are easier to tax than income [Ekelund and Tollison, 1981]. But such policies can also be used to increase bribes. Using our roadblock analogy, bureaucrats shut down some roads to increase the tolls on the passage through others, especially if the tolls on the shut-down roads are more difficult to collect.

A very simple numerical example may clarify this point. Suppose that a country can import either green or red cars, and that the border price of either car is 5. Suppose that consumers demand only ten cars total and that the valuation of a red car is 15 for each consumer but of a green car it is only 10. In a free market the country will import only red cars at the price of 5, and end up with a consumer surplus of $10 \times (15 - 5) = 100$. If the ministry

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1. Importantly, if corruption with theft *replaces* taxes, then the corrupt state might have to replace the lost revenue through very distortionary taxation.

could tax car imports, it would charge an import duty of 10 per car, which would result in the importation of ten red cars, no consumer surplus, and the government revenue of 100. In this case, taxes lead to no efficiency losses but a redistribution from consumers to the government. Suppose alternatively that the trade ministry bureaucrats want to raise revenue through bribes rather than taxes. However, they cannot undetectably collect bribes at the border for importing *red* cars (which are too bright and noticeable), but can collect bribes for importing green cars. The ministry then bans red car imports altogether, and demands a bribe of $10 - 5 = 5$ on each imported green car. In equilibrium, no red cars are imported, the consumer surplus falls to zero, and bureaucrats collect $10 \times 5 = 50$ on the import of green cars. Social surplus falls from 100 in the case of taxation to 50 in the case of corruption.

The surplus is even lower if resources are spent by the bureaucrats on securing their positions, and by them and importers on avoiding detection and punishment. These rent-seeking activities consume resources and dissipate gains from bribes [Tullock, 1967; Krueger, 1974]. In the extreme case, the cost of such rent-seeking activities adds up to the whole remaining bribe surplus of 50. In this case, corruption eliminates the social surplus from imports completely.

A real-world example of a bottle-making factory in Mozambique illustrates these distortions from corruption. In 1991 that factory had modern Western equipment for making bottles, but used a traditional process for putting paper labels on these bottles. Three old machines were used: one cut the labels from paper; one then glued the white label on the bottle; and finally one printed a red picture on the label. The bottles were moved manually between these machines. In roughly 30 percent of the cases, the picture was not centered on the label. When this happened, the bottles were handed over to approximately twelve women who sat on the floor near the machines and scraped off the labels with knives, so that the bottles could be put through this process again.

Apparently, the process of labeling bottles could be mechanized with a fairly simple machine that cost about $10,000 and could be readily bought with aid money from any of a number of western or even Third World suppliers. The manager of the factory, however, did not want to buy such a machine, but instead wanted to have a $100,000 machine, that not only mechanized the existing process, but also printed labels in sixteen colors and different shapes, and put them on different types of bottles. Only

one producer in the world made that machine, and the Mozambiquan government applied to the producer's home country for an aid package to buy it. Since that aid was not immediately forthcoming, the factory kept using the traditional technology.

The demand for equipment much fancier than the factory appeared to need seems irrational until one realizes that buying a fancier machine offered the manager (and the ministry officials) much better opportunities for corruption. If the factory bought a generic machine, the manager would probably have to use international donors' guidelines and consider several offers. There would be very little in this deal for him personally. On the other hand, if he got a unique machine, he would not have to solicit alternative bids. The supplier in turn would be happy to overinvoice for the machine, and kick back some of the profits to the manager (and his ministerial counterpart). The corruption opportunities on buying a unique and expensive machine are much better than such opportunities on buying cheaper generic products.

The social cost of corruption in this example may be large. If the social value of the $100,000 machine is only $20,000, and the bribe that the manager can collect from overinvoicing is $3000, then the social cost of corruption is $80,000. In other words, social costs of misdirection of resources toward activities that offer better corruption opportunities can vastly exceed bribe revenues.

Western observers often wonder about the preference for unnecessarily advanced rather than "appropriate" technology by Third World governments. Overinvoicing provides the obvious explanation for this preference for advanced technology. The rational managers and bureaucrats in poor countries want to import goods on which bribes are the easiest to take, not the goods that are most profitable for the state firms. To do that, they basically discourage or even prohibit the importation of appropriate technology, and encourage the importation of unique goods on which overpayment and overinvoicing are more difficult to detect. As a result, very poor countries end up with equipment way beyond their needs.

This example fits neatly into our framework. To maximize the value of their personal revenues, bureaucrats prohibit imports of goods on which bribes cannot be collected without detection, and encourage imports of goods on which they can collect bribes. As a consequence, the menu of both consumer and producer goods available in the country is determined by corruption opportunities rather than tastes or technological needs. This argument might

suggest why so many poor countries would rather spend their limited resources on infrastructure projects and defense, where corruption opportunities are abundant, than on education and health, where they are much more limited. In light of the enormous returns on these forgone health and education projects, the social costs of corruption might be enormous. Without the need to keep corruption secret, officials could collect their bounty in much less distortionary ways.

The imperative of secrecy entails another potentially important cost of corruption, namely its hostility to change and innovation. Keeping corruption secret requires keeping down the number of people involved in giving and receiving bribes. The elite must then include only a small oligarchy of politicians and businessmen, and refuse entry to newcomers. This situation may well describe the Philippines under Marcos, Russia under Communists, or some African dictatorships. But innovation and change are often precipitated by outsiders. To the extent that the elite prevents them from entering, to maintain their profits or simply to keep down its numbers to preserve secrecy, growth will suffer. It remains an interesting puzzle how small ruling elites in Korea have managed to keep up innovation and growth despite the effective exclusion of outsiders from both economic and political participation.

V. CONCLUSION

This paper has explored two broad reasons why corruption may be costly to economic development. The first reason is the weakness of central government, which allows various governmental agencies and bureaucracies to impose independent bribes on private agents seeking complementary permits from these agencies. When the entry of these agencies into regulation is free, they will drive the cumulative bribe burden on private agents to infinity. A good illustration of this problem is foreign investment in post-Communist Russia. To invest in a Russian company, a foreigner must bribe every agency involved in foreign investment, including the foreign investment office, the relevant industrial ministry, the finance ministry, the executive branch of the local government, the legislative branch, the central bank, the state property bureau, and so on. The obvious result is that foreigners do not invest in Russia. Such competing bureaucracies, each of which can stop a project from proceeding, hamper investment and

growth around the world, but especially in countries with weak governments.

Downs [1967] calls the expansion of bureaucracies into new regulations "territoriality," but does not elaborate on its consequences for resource allocation. We showed how costly territoriality can be when different agencies are neither kept honest nor controlled by a central authority. We have explored the effects of territoriality when agencies impose regulations independently to maximize their individual bribe revenues. But even if bureaucrats are kept honest and introduce regulations only to expand their own domains without coordination from above, compliance with these regulations can be very costly to private agents.

The second broad reason that corruption is costly is the distortions entailed by the necessary secrecy of corruption. The demands of secrecy can shift a country's investments away from the highest value projects, such as health and education, into potentially useless projects, such as defense and infrastructure, if the latter offer better opportunities for secret corruption. The demands of secrecy can also cause leaders of a country to maintain monopolies, to prevent entry, and to discourage innovation by outsiders if expanding the ranks of the elite can expose existing corruption practices. Such distortions from corruption can discourage useful investment and growth.

Throughout the paper we have argued that economic and political competition can reduce the level of corruption and its adverse effects. If different agencies compete in the provision of the same services, corruption will be driven down provided that agents cannot simply steal. Similarly, political competition opens up the government, reduces secrecy, and so can reduce corruption provided that decentralization of power does not lead to agency fiefdom and anarchy.

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